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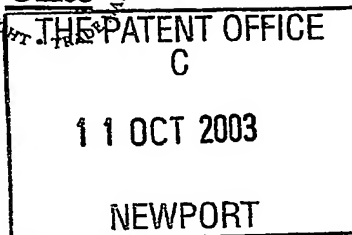
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# Request for grant of a patent

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1. Your reference ngr.3150.uk.cr.d

2. Patent application number 0323881.3  
(The Patent Office will fill in this part) 11 OCT 2003

3. Full name, address and postcode of the or of each applicant (underline all surnames)  
  
Neil William Graham  
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8 Auldhouse Avenue  
GLASGOW  
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*87317 05001*

Patents ADP number (if you know it)

If the applicant is a corporate body, give the country/state of its incorporation

4. Title of the invention Novel occlusive dressing

5. Name of your agent (if you have one) Kennedys Patent Agency Limited  
Floor 5, Queens House  
"Address for service" in the United Kingdom to which all correspondence should be sent (including the postcode) 29 St Vincent Place  
Glasgow  
G1 2DT

Patents ADP number (if you know it) 08058240002 ✓

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and (if you know it) the or each application number	Country	Priority application number (if you know it)	Date of filing (day / month / year)

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application	Number of earlier application	Date of filing (day / month / year)

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (Answer 'Yes' if

a) any applicant named in part 3 is not an inventor, or

b) there is an inventor who is not named as an applicant, or

c) any named applicant is a corporate body.

See note (d))

No

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Continuation sheets of this form

Description 9

Claim(s)

Abstract

Drawing(s)

2 + 2

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10. If you are also filing any of the following, state how many against each item.

Priority documents

Translations of priority documents

Statement of inventorship and right to grant of a patent (*Patents Form 7/77*)

Request for preliminary examination and search (*Patents Form 9/77*)

Request for substantive examination (*Patents Form 10/77*)

Any other documents  
(*please specify*)

11.

I/We request the grant of a patent on the basis of this application.

Signature

Kennedy

Date

KENNEDYS

10 October 2003

12. Name and daytime telephone number of person to contact in the United Kingdom

Claire Rutherford

Tel: 0141 226 6826

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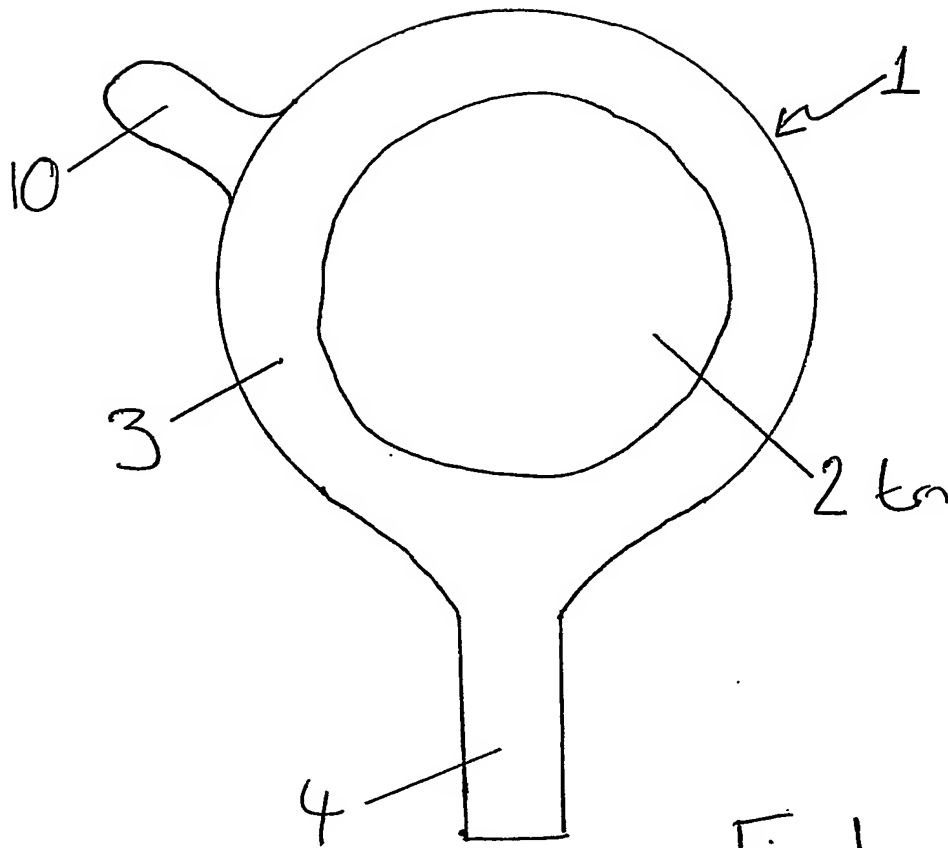


Fig 1

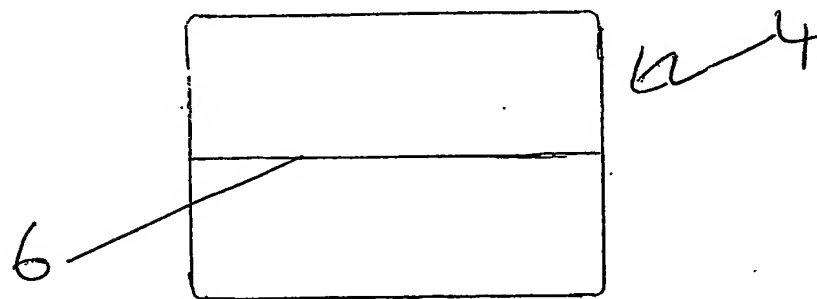


Fig 2

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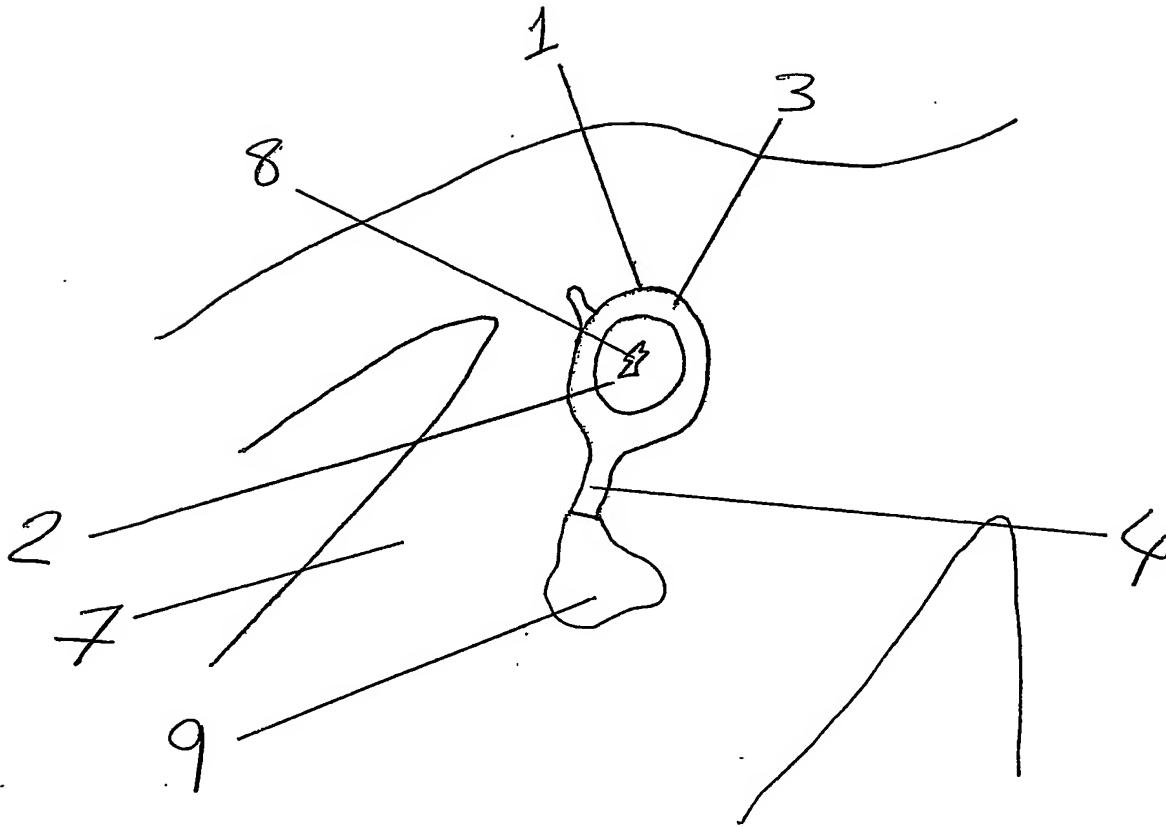


Fig 3

1 Novel Occlusive Dressing

2

3 The present invention relates to the field of occlusive  
4 dressings and, more specifically, to occlusive dressings  
5 which allow the escape of fluid and air in cases of  
6 penetrating thoracic trauma.

7

8 In the majority of cases where serious injury occurs, it  
-----  
9 is necessary to apply a dressing to the wound in  
10 question. In the cases of penetrating thoracic trauma,  
11 an object like a bullet, knife or metal fragment for  
12 example has penetrated the chest wall, or both the chest  
13 wall and the lung itself, exposing the pleural space to  
14 the atmospheric pressure of the outside environment.

15

16 In order for a patient to breathe, it is necessary to  
17 maintain a proper pressure differential between the  
18 pleural cavity and the outside environment. Normally,  
19 the visceral and parietal pleura are separated by the  
20 pleural space, which itself is filled with pleural fluid.  
21 Typically, during inspiration, the rib cage expands,  
22 pulling the pleural pleura away from the visceral pleura.  
23 A negative pressure in the pleural space then develops in

1 the lungs themselves, and positive atmospheric pressure  
2 forces air into the lungs.

3  
4 When the normal negative pressure of the pleural space is  
5 exposed to the more positive atmospheric pressure in  
6 cases of trauma, outside air flows into the pleural space  
7 through the wound or through the punctured lung, causing  
8 a tension pneumothorax to develop. This is a very  
9 serious medical problem and eventually can result in the  
10 collapse of the lung, cardio-pulmonary collapse,  
11 unconsciousness, followed soon thereafter by cardio-  
12 pulmonary arrest and death.

13  
14 It can therefore be seen that it is very important that a  
15 dressing be applied to the wound which prevents any air  
16 from entering the pleural space through the wound.

17 However, at the same time, the dressing must allow air  
18 entering the pleural space through a punctured lung to

---

19 escape from the wound, along with any blood that may have  
20 leaked into the pleural space as a result of the trauma.

21 A dressing of this type would allow a patient to at least  
22 partially maintain the proper pressure differential  
23 between the pleural cavity and the outside environment.

24  
25 In the past, a number of dressings have been described  
26 and used to try and deal with this issue. In the most  
27 basic sense, paramedics commonly use ad-hoc dressings  
28 created on-site, consisting of a piece of sterile plastic  
29 wrap taped on three sides, with the fourth side left open  
30 to allow air and fluid to escape. However, this is an  
31 extremely time consuming operation, and often results in  
32 the dressing being applied incorrectly, which can lead to  
33 a tension pneumothorax. Other dressings have been

1 described which include a valve protruding at 90° from  
2 the surface of the dressing. Again, this results in the  
3 application of the dressing being difficult, and also can  
4 cause problems for the applicator of the dressing, as  
5 discharges of bodily fluids are directed towards the  
6 applicator in this case. There is also the issue that  
7 when a valve protrudes from a dressing, it is difficult  
8 to apply a number of dressings to both, for example the  
9 front and rear of a patient, as in gun shot cases where  
10 there is both an entry and exit wound. There is also the  
11 issue that even in cases where the dressing itself allows  
12 visualisation of the wound, because the valve is  
13 protruding from the centre of the dressing, this  
14 obstructs the view of the wound.

15

16 It can be seen that it would be beneficial to be able to  
17 provide an occlusive dressing appropriate for use in  
18 penetrating thoracic trauma cases.

---

19

20 According to the present invention, there is provided a  
21 dressing comprising a bandage section, having a perimeter  
22 sufficient to occlude a wound, and a valve section that  
23 allows the escape of fluid, wherein the valve section  
24 lies substantially on the same plane as the bandage  
25 section.

26

27 Preferably the bandage section comprises a transparent  
28 area.

29

30 Preferably the outer edge of the bandage section  
31 comprises adhesive.

32

33 Preferably the valve section comprises a flutter valve.



1

2 Most preferably the flutter valve is housed in a  
3 substantially rigid casing.

4

5 Preferably the bandage section is substantially  
6 elliptical or circular in shape.

7

8 Preferably the bandage section is provided with an  
9 extending tag section allow for easy gripping.

10

11 Preferably the flutter valve can be provided with a  
12 collection bag.

13

14 Preferably the dressing is manufactured from non-  
15 allergenic material(s).

16

17 Optionally the dressing is manufactured from latex.

18

---

19 Optionally the valve is provided with a flushing system.

20

21 Preferably the flushing system comprises an aperture in  
22 the wall of the valve into which fluid can be inserted.

23

24 In order to provide a better understanding of the present  
25 invention, embodiments will now be described by way of  
26 example only and with reference to the following  
27 drawings, in which:

28

29 Figure 1 shows a plan view of a dressing according to the  
30 present invention;

31

1 Figure 2 shows a cross-section view of the flutter valve  
2 according to the preferred embodiment of the present  
3 invention; and

4

5 Figure 3 shows an example of the dressing in use  
6 according to the present invention.

7

8 In the preferred embodiment, there is provided a dressing  
9 1, as can be seen in Figure 1. The dressing 1 is  
10 substantially elliptical in shape with regard to the  
11 bandage section 3, which provides it with ergonomic  
12 characteristics, making it easier to use than the  
13 standard square type bandages. The bandage section 3 is  
14 provided with a central transparent area 2, which allows  
15 the underlying wound 8 to be visualised by a paramedic or  
16 doctor, even whilst the dressing 1 is in use. A valve  
17 section 4 is provided which allows the exiting of  
18 unwanted air and fluids from the wound 8, whilst

---

19 preventing the intake of air into the wound 8, which  
20 would disrupt the equilibrium in the pleural cavity.

21

22 Figure 2 is a brief diagram of the valve section 4. Here  
23 it can be seen that the valve section 4 is in the form of  
24 a flutter valve, wherein a valve leaflet 6 allows the  
25 escape of fluids, but does not allow the ingress of  
26 air. The flutter valve is provided with a rigid outer  
27 casing 5, which strongly reduces the likelihood of valve  
28 blockages, as well as making the valve section 4  
29 generally more robust for use in emergency situations.

30

31 Figure 3 shows an example of the dressing 1 in use on a  
32 wound 8 position on the upper torso 7 of an individual.  
33 It can be seen that the dressing 1 is positioned over the

1 wound 8 with the ergonomic shape of the bandage section 3  
2 and the transparent area 2, ensuring that the positioning  
3 of the dressing is both rapid and easy. Any air that is  
4 escaping from the wound 8, or any blood or liquid that is  
5 escaping due to the wound 8, is able to drain away  
6 through the valve section 4 on the dressing 1. However,  
7 the valve section 4 is a one-way valve, and therefore no  
8 air or liquid, etc., is able to regress back into the  
9 wound 8 from the external environment. Ideally, in the  
10 preferred embodiment, a collection bag 9 is positioned at  
11 the end of the valve section 4 to allow air and bodily  
12 fluids to be kept in one place. Typically this  
13 collection bag 9 will be provided with apertures or will  
14 be produced in the matter that allows gaseous exchange  
15 with the external environment.

16

17 The dressing 1 is designed in such a manner that it user  
18 friendly and can be manufactured in non-allergenic

---

19 material, which increases the likelihood of adoption by  
20 medical and NHS staff. There are a number of benefits to  
21 this dressing 1 over and above dressings that have been  
22 suggested in the past. The ergonomic design of the  
23 dressing 1, along with the transparent area 2 that is not  
24 obstructed by the valve section 4 in any manner,  
25 increases the speed of application and reduces the time  
26 that it would take to deliver a patient to hospital, for  
27 example.

28

29 The described dressing 1 also does not require careful  
30 positioning on the patient in order to allow the wound 8  
31 to breathe. As covering a wound 8 and stopping it from  
32 breathing can lead to tension pneumothorax, it is  
33 advantageous that even a speedy application of the

1 dressing 1 described in this invention would not cause  
2 this problem.

3  
4 Another benefit to the dressing 1 described in the  
5 present invention is that the valve section 4 lies flat  
6 on the patient, as it is substantially on the same plane  
7 as the bandage section 3, rather than protruding  
8 horizontally, as in the case of previously described  
9 dressings. This protects the applicator of the dressing  
10 1 from the discharge of bodily fluids which offers  
11 improved health and safety conditions for the applicator.  
12 It also has the major benefit of allowing dressings 1 to  
13 be applied to both the rear of the patient and the front  
14 of the patient, without resulting in discomfort or  
15 additional damage to the patient.

16  
17 The transparent area 2 offers the applicator an  
18 unobstructed view of the wound 8, which is significantly  
19 beneficial over prior dressings, as it allows the  
20 applicator to monitor the condition of the wound 8,  
21 whilst still sealing the wound 8 and stopping air from  
22 penetrating, resulting in a sucking wound and the  
23 possibility of a tension pneumothorax. It also allows  
24 the applicator to visualise the wound 8, whilst reducing  
25 the possibility of infection or infectious agents  
26 penetrating the wound 8.

27  
28 The dressing 1 described in the present invention can  
29 also be used as a pressure dressing to stem the flow of  
30 blood and improve the patient's situation. In order to  
31 further increase this aspect, it is possible to provide  
32 additional layers to the dressing which can be filled  
33 with air or fluid to provide constant tension.

1 Alternatively, additional gauze or material can be  
2 incorporated in the bandage section for comfort.

3

4 It is also worth noting that the use of a dressing 1,  
5 such as the one described, highlights the location and  
6 the possible type of wound 8 to the staff at a receiving  
7 hospital, allowing faster assessment of the wound 8.

8

9 The rigidity of the valve outer casing 5 is also very  
10 important, as it reduces the likelihood of valve  
11 blockages and decreases the likelihood of a tension  
12 pneumothorax. It also allows the dressing 1 to be  
13 handled much more roughly, standing up to the extreme  
14 conditions often faced in an emergency situation.

15

16 The dressing 1 is often provided with a large grip tag  
17 10, which allows both easy removal of the dressing 1 when  
18 required, even whilst the person providing assistance is

---

19 wearing gloves, and also allows the adhesive on the  
20 reverse of the dressing 1 to be uncovered easily, as  
21 typically it will be covered in an appropriate material  
22 prior to use, which is then quickly removed when the  
23 dressing is required to be fixed in place on a patient.

24

25 The irrigation flushing system is an optional embodiment  
26 of the present invention. In this case, the valve  
27 section 4 is made up of an outer section, as well the  
28 inner valve leaflets 6. As mentioned above in the  
29 preferred embodiment, the outer section comprises a rigid  
30 outer casing 5. If an irrigation flushing system is  
31 included, an aperture is provided in the outer section of  
32 the valve section 4 and, at intervals, liquid such as  
33 water or any other appropriate fluid, can be inserted

1 into the aperture and flushed through the valve section 4  
2 to clean out the inside of the valve.

3

4 Another optional embodiment has a collection bag 9  
5 attached to the base of the valve section 4, to allow the  
6 collection of any fluids.

7

8 In conclusion, the dressing described in the present  
9 invention has a number of benefits over the prior art.  
10 However, the abovementioned description should not be  
11 taken as being limiting, as further modifications and  
12 improvements can be made by one skilled in the art within  
13 the scope of the invention herein disclosed.

14

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